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ABSTRACT

The paper offers a brief definition of open education from a framework which is designed to be descriptive rather than proscriptive, and then considers the problem of how educators can evaluate the effectiveness of open educational practices. Open education policies are looked at from a historical and philosophical perspective, a psychological perspective, a sociological perspective, a practical perspective, and an evaluative perspective. Then, six steps are suggested for doing evaluative research in open classroom settings: (1) define competencies, achievements, or operational-behavioral objectives that one expects to be learned by the participants in the program; (2) choose measures that are directly relevant to the expected outcomes; (3) measure the children's performance on these criteria as they begin the program; (4) observe children as they participate in the program to get a clear empirical view of what they actually did in the program; (5) remeasure the children's performance on criteria after they participate in the program; and (6) relate observed child behavior to measured change on the related criteria. These steps are explained further. It is argued that it is possible to evaluate open education if we consider educational evaluation research as "treatment effect research" and carefully define outcomes and carefully describe treatment, and then demonstrate the relationship between the two. (RC)

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OPEN EDUCATION, CAN WE EVALUATE IT?

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Open education, open classroom, informal learning, integrated curricula, and the like, represent terms from a current movement in the conception of educational goals and educational practices in England and in the United States. A diverse group of educators, mainly at the preschool and primary levels, are interested in, and utilize these concepts. As with any concept in education, there exists wide variation both in objectives (definitions) and in implementation (programs). For example, some advocates of open education are linked with the free school movement and seek radical reform of the entire society and the schools, others hold more to tradition and see open education as a strategy to best serve the needs of learners' personal growth and academic achievement. Some might want to include the Montessorians in the mainstream of the movement because of their emphasis on spontaneous choice. Others would out of hand reject them, because many Montessori activities are sequentially predetermined.

It is the purpose of this paper to offer a brief definition of open education from a framework which is designed to be descriptive rather than proscriptive, and then to tackle the problem of how we, as educators, can evaluate the effectiveness of open educational practices.

Historical and Philosophical Perspective

In the United States, open education policies have their clearest roots in the educational philosophy of John Dewey and the subsequent progressive education movement.

When Dewey described the progressive schools of 1928, he said:

> "All of the schools exhibit, as compared with traditional schools, a common emphasis upon respect for individuality and for increased freedom; a common disposition to build upon the nature of experience of the boys and girls that come to them, instead of imposing from without external

> subject matter and standards. They all display a certain atmosphere of informality, because experience has proved that formalization is hostile to genuine mental activity and to sincere emotional expression and growth. Emphasis upon activity as distinct from passivity is one of the common factors. And, again, I assume that there is in all of these schools a common unusual attention to human factors, to normal social relations, to communication and intercourse which is like in kind to that which is found in the great world beyond the school doors; that all alike believe that these normal human contacts of child with child and of child with teacher are of supreme educational importance, and that all alike disbelieve in those artificial personal relations which have been the chief factor in isolation of schools from life. So much at least of common spirit and purpose we may assume to exist. And, insofar we already have the elements of a distinctive contribution to the body of educational theory: respect for individual capacities, interests and experience; enough external freedom and informality at least to enable teachers to become acquainted with children as they really are; respect for self-initiated and self-conducted learning; respect for activity as the stimulus and center of learning; perhaps above all belief in social contact, communication, and cooperation upon a normal human plane."[1]

In England, it is harder to see the influence of one educational thinker, or philosopher, but rather one finds a cumulation of ideas, many from psychologist Jean Piaget and Susan Isaccs. It is interesting, however, to note the similarities and parallels to Dewey's description in Weber's summary of the nature of the Britaih Infant School's informal educational practices as she sees them from her own personal experience and from reviewing the various reports on them:

> "The literature that synthesizes a description of the infant school entity, including the multiplicity of illustrations and case studies, the Hadow Report, the Plowden Report, and the Nuffield case histories, had at its touchstone a view of how children grow and learn in non-proscribed systems."

Weber found in her analysis of these reports and from her own observations and interviews with those participating in the infant school that the child was always central:

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[1]John Dewey, Progressive Education and The Science of Education, Progressive Education, Vol. 5, (1928) reprinted in Martin S. Dworkin ed., Dewey on Education (New York: Teachers College Press, Classics in Education, No. 3, 1965).

> "Plans were not made from the vantage point of a syllabus of demands which a child had to meet, but with relevance to children in the most immediate way. A plan fitted itself to a child. It was developed in response to the pace and internal pattern of his own growth and in support of his own purposes. It was developed through watching a child, studying him at his moments of deepest involvement in play.... A free situation, activity, movement, a rich environment were just the implements, the ways of unimpeding a child's own propulsion. The prototype of a teacher as controller, or "giver-out," and a child as "taker-in" inevitably gave way to a different concept, still developing in England. With such an analysis as base, teaching gives way to helping learning. It is a difficult concept and its implications are still being explored and reached for in the real test of actual practice."[2]

From an American point of view, it is interesting to see many aspects of the progressive educational philosophy, which was eclipsed in the mid-1930's, re-awakened by an accumulation of ideas and practices put forth by the English in the 1970's.

Psychological Perspective

Educational psychologists focus most directly on the nature of the learner. With the strong emphasis on "child centeredness" as described in the section previously, the followers of open education concepts find their ideas most congruent with the practical educational positions of Jean Piaget and of Susan Isaccs. Emphasis is put on intelligence and social growth unfolding as the child acts upon his environment, learning in a natural way to become less egocentric, emotionally and cognitively, and above all to rely on intrinsic motivational systems. Open education advocates would rarely support operant conditioning theories or practices.

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[2]Lillian Weber, The English Infant School and Informal Education, pp. 169-188, 1971, Prentice Hall, Englewood Cliffs, New Jersey.

They don't think that children learn through reinforcement; they believe that children learn because something inside pushes them to, or as Robert W. White has suggested, children learn because they need to be effective and competent.

A final psychological position, foreshowed by Dewey's philosophy and emphasized also by Piaget and Isaccs, is the objection of the dualistic notion that separates the cognitive and affective components of the learning experience. Proponents of open education attempt to view the child as a whole person and give a balance of consideration toward feelings and thoughts.

Sociological Perspective

Despite Christopher Jenck's recent arguments about the relationship between education and social mobility, the American people continue to see education as a vehicle for the attainment of wealth and social status. Open classroom practices are met with skepticism by those groups of traditionally-minded individuals who seek this mobility and fear that the innovative open schools do not put enough emphasis on achievement. Beginning with Dewey, and supported by sociologists of the "post-industrial society", advocates of open education argue that their practices go beyond the mere training of skills and 1) facilitate the child's ability to adapt to a rapidly changing society by becoming creative problem solvers, 2) prepare children for the real world, the future rather than enslave them to past traditional labor and work, and 3) help learners become individuals who can intelligently shape the destiny of the social order with their problem solving orientation. Traditionalists also fear that the decentralization of authority in the open schools leads to a

breakdown of social order in them. They see this as bad because it gives rise to poor learning conditions and because it teaches other questionable values and goals. The advocates of open education would argue that the new decentralized authority represents their democratic procedures.

In a final sociological consideration, it is possible to see that our schools exist to maintain the existing social class system. Under these conditions, the upper classes receive the most innovative educational programs, which of course include the open classroom. Although Dewey's influence here is anti-elitist in terms of values and goals of education, it is possible to view the situation this way: Those individuals at the top of the social system who command wealth and resources and access to education, will use their autonomy and superior problem-solving abilities learned in the open schools to maintain their elite position, while the more traditional methods will be used to train the lower classes for a life of labor and low status within the system.

A Practical Perspective

In a paper entitled "Research On Open Education: Problems And Issues", Lillian Katz offers the most complete and manageable practical definition of open education. The definition is in terms of comparisons between formal, traditional classrooms and open informal classroom practices and has been schematized by her in the following way. (See Figure 1.)

Katz's diagram gives the reader a clear picture of how open educational concepts effect practice. The issue of identifying a well-implemented or good open classrooms remains problematic. First of all, it is possible for schools to adopt certain limited practical procedures and in the final analysis, their practices may not make up a whole which can be recognizably called open education. For example, a school may have vertical grouping,

FIGURE 1

The Position of Open-Informal and Traditional-Formal Classes

On Selected Dimensions of Classroom Life

Space	Flexible Variable	O-I F-T	Routinized Fixed
Activities of Children	Wide Range	O-I F-T	Narrow Range
Origin of Activity	Children's Spontaneous Interests	O-I F-T	Teacher or Perscribed by School
Content or Topics	Wide Range	O-I F-T	Limited Range
Use of Time	Flexible Variable	O-I F-T	Routinized Fixed
Initiation of Teacher-Child Interaction	Child	O-I F-T	Teacher
Teaching Target	Individual Child	O-I F-T	Large or Whole Group
Child-Child Interaction	Unrestricted	O-I F-T	Restricted
Emphasis on Academic Skills and Standards	High	O-I F-T	Low

O-I = Open-Informal Classes: F-T = Formal-Traditional Classes

learning centers and flexible planning, but may continue to stress drill on basic skills, structure time into activity periods, and rely on an authoritarian disciplinary system. Under these or similar conditions, observers can have an uncanny experience of observing an open-classroom that is essentially traditional. The second kind of problem associated with finding good open classrooms is the difficulty in observing and defining some practices that seem to be highly intuitive. For example; a child is looking for something to do in the classroom, and the teacher allows him to spend a long time searching or even just sitting doing nothing. Under these conditions, when should a teacher offer guidance and when should he or she rely on the spontaneous decision-making power of the child? In discussing problems like this one, advocates of open education concepts can easily state that much of the practice relies on being "truly open". The problem with this response is that it is similar in nature to open classrooms that are essentially traditional--"truly open" is only part of a whole approach, and without other elements, such as shared and mutual respect for authority, self direction, and the like, good open classroom practices remain undefinable. In the final analysis, the part will be greater than the whole.

Before moving to the problem of evaluation of open education practices, it is possible to offer a hortative conclusion based on the descriptive discussion offered in the previous pages. This could be considered under the topic what is really crucial in calling a classroom open:

1) Children exercise responsible independence of thought; planning and choice over their time in the classroom.
2) Children and teachers share a mutual respect for authority and work out problems democratically.
3) Children exercise their intrinsic motivational system.

4) Knowledge is seen in terms of learning to solve problems rather than the acquisition of skills and tools which is seen as incidental effects of real learning.

A Perspective On Educational Evaluation

I have come to see educational evaluation, whether it be "formative" or "summative", "global" or "specific", "objective" or "subjective" in the "cognitive" or "affective" domains as a specific kind of social science research that deals with treatment effects. At the most simple level, those who work at evaluation want to know how something is working. Then, with a positive engineering approach, they want to make changes which make something work better. In medical research, the problems and solutions have an all or nothing quality. Once the germ theory of disease was carefully explained, certain chemical and antibacterial treatments either removed the problem or they did not. Everyone argues that in education things are more complicated, but at the core of evaluation research we still hope to know if our methods are producing the desired outcomes. For example, did certain Head Start programs really effect changes in the life chances of poor children? Do teaching machines really teach spelling better, and faster, and with less pain to the elementary school child struggling to become literate? Do open classrooms teach children to plan their own time more effectively? Do teachers who are warm and open have happier children in their calssrooms?

Let me try to help you buy into the treatment effect notions of evaluative research by describing the process by which Susan Stodolsky and I and others made decisions about, and implemented this kind of research in an ongoing evaluation project of a nationally famous Montessori school. The school served middle-class children, and the school maintained a

Head Start population who were integrated into the school and supported by federal monies.

We came to the project as investigators in 1970 after it had been initiated by others in 1966. Up till then, the major tool of evaluation that had been used was a pre and post test matched pair design (between Head Start children and their middle-class age mates) using a global measure of IQ (Stanford Binet) and some experimental Piagetian tasks. The initial schooling effect had been reported: The Head Start children, as a group, had made dramatic gains on S.B. IQ after the initial year of schooling, and then in the subsequent years they had reached a plateau. Results of the Piagetian tasks were inconclusive.

Our problem was to select measures that we felt would clearly tap the kinds of specialized skills taught in the Montessori program. Because of its emphasis on vocabulary, the S.B. seemed to be clearly counter-indicated given the specific emphasis on psychomotor skills from the Montessori curriculum. By changing to the Merrill Palmer Scales and the WPPSI Performance Scales, we began to identify real differences produced in the achievement of the children by this program. (See Stodolsky and Karlson, 1972.) Where gains in language skills were falling off, progress was being made in psychomotor skills. We found the Montessori "treatment" was working fine in its areas of strength, and we could, of course, make some suggestions about its area of weakness.

We were also able to identify a second issue which became the basis of a year-long observational-evaluation study of the program (Karlson, 1972). It is related specifically to the problem of evaluating open classroom practices. The Montessorians firmly believe in spontaneous choice of activities and it became clear to us, after an initial pilot

time-sampling study in a summer program, that the children utilized the program differentially and developed their own repetitive patterns of work and play. In other words, treatment was not uniform. What one Montessori schooled child did was very different from what another did, and while we could see group differences in change on certain measures, we thought the real pay-off would be in knowing what individual children did with their time. If we could pin treatment down in terms of child behavior, then we could more effectively relate it to measured outcomes. I would suggest that the notion of focusing on individual child behavior in the classroom is a significant way to seeing the treatment effect in progress and watching it work, and with some refinement, measuring it.

This is what was done to "describe treatment" for the preschool program under evaluation. A sample group of children from each classroom were chosen and pre and post tested with selected performance items of the WPPSI which, on an apriori basis, we felt were keyed to the Montessori curriculum. Between pre and post testing each child was observed on a near daily basis by a team of trained observers. The observational system allowed for us to describe a pattern of activity choice for each child and for groups of children. It also allowed us to describe a natural taxonomy of activity behavior , i.e., how the children used the Montessori curriculum; that is, what activities were popular and what activities were not. We could also look at group differences and similarities in use of the curriculum by age, sex, social class, and initial ability differences. We found that children utilized the curriculum differentially. That is, when the setting is open and children do their "own thing" the notion of uniformity of treatment is not possible. Children develop their own patterns of work and activity. The <u>group</u> differences were also interesting--For example, girls preferred practical life activities and

sorting and matching activities, while boys preferred construction toys, block activities, and special projects.

More relevant to our present concerns was the dramatic relationship between the amount of time engaged in specific activity behavior and gain made on the WPPSI Scales. In a stepwise regression analysis, it was possible to account for 92% of the change or gain in the post test WPPSI scores. We found that the doing of art activities, construction toys with open solutions, and block activities contributed positively to gain, but that doing fixed solution puzzles and Montessori sorting and matching activities inhibited gain. By describing treatment in an empirical way, seeing what the children actually did with their open time, we were able to effectively evaluate the curriculum.

The argument I have developed here is that: 1. evaluation is essentially treatment effect research; 2. results are found or not found when the instruments used to measure the treatment effect are closely aligned with our programs objectives; 3. that treatment and outcome can be most clearly understood if one can describe the treatment empirically and in terms of child behavior.

I feel that this definition and approach to evaluation is an appropriate one to be applied to evaluating open education practices. In the following section, I would like to offer some specific suggestions, some real examples, and some speculations.

How to Evaluate Open Educational Practices

I would suggest that the major way to do evaluative research in open classroom settings would involve six steps.

1. Define competencies, achievements, or operational-behavioral objectives (outcomes) that one expects to be learned by the children who participate in the program.

2. Choose measures or assessments that are directly relevant to these expected outcomes.
3. Measure the children's performance on these criteria as they begin the program.
4. Observe children as they participate in the program to get a clear empirical view of what they actually did in the program.
5. Remeasure the children's performance on criteria after they participate in the program.
6. Relate observed child behavior to measured change on the selected criteria.

The major contribution of this approach can be found in the direct knowledge of treatment--what children do in open classroom settings--and how this activity is related or not related to what is learned. Each step may present problems for the researcher in several areas. The following point by point description is intended to attempt to further expand definitions, anticipate difficulties, and give examples and suggestions.

1. Defining Outcomes

Operationalizing objectives is the least complex when the skill to be taught is simple. Simple psychomotor skills, like drawing a straight line, copying a circle or building a block tower are easy to define and to measure achievement of. These kinds of objectives become more difficult to define when the criteria become more complex. I would see that many kinds of objectives inherent in open education concepts are not complex and, therefore, could be easy to define. Some are: The child plans his own time well; the child seeks help and guidance when he needs it; the child has positive peer interactions; the child has problem solving skills; the child completes tasks he initiates; the child self selects activities; and the child is neither compliant nor defiant in relationship to authority.

It would, perhaps, be an arduous and complex task to define all objectives of open educational concepts and some common terms such as self actualizing, competent, self directing and autonomous may involve too many conceptual complexities. In any case, it is possible to make a beginning.

2. Choosing Measures or Assessments.

American psychologists offer the researcher an absolute abundance of well-standardized measures of skills and competencies of all kinds, so the task here may involve only a careful search. Probably because of their unreliable nature, educational researchers have largely neglected projective measures which might be most appropriate for assessing affective attitudinal and/or personal growth goals. Inventive researchers can devise their own coding systems for assessing growth or change in these areas. However, classic systems could be used to test achievement and affiliate needs and attitudes toward authority and/or autonomy. What might be helpful here is an independent content analysis of Buros Mental Measurement Yearbook and other sources that would categorize existing instruments.

3. Measuring Children's Initial and Final Performance. (Including Step 5.)

If we are to say anything about the effect of the school experience on the child, we must talk about changes in behavior or performance from an initial point to a subsequent one. Therefore, the pre test-post test mode seems to be inescapable. The need for control groups receiving the same instruments under a no-program condition has been a recurring problem in educational evaluation research. An advantage of including Step 4 is that by clearly defining treatment through observations, we can argue that control groups are less necessary.

4. Observing and Recording Treatment.

Several issues are important here. First of all, there are problems recording data. These include the major option of using a pre-coded system or collecting the data in a naturalistic manner and then reducing or unitizing the data into a more manageable form for analysis. Further recording problems are more technical. They include the possible use of television versus the live observer, the number of observations necessary to provide a stable and representative data base, and reliability between different observers. After recording problems are resolved, the issue of how to unitize the observational data can be considered. At this point, it is possible to devise a system that can describe treatment at many levels of complexity. For example, when we analyzed the observational data from the Montessori setting, we used categories of child behavior that directly corresponded to doing an activity. From these data we were able to generate an estimate of what percentage of time an individual child spent doing a) puzzles, b) socio-dramatic play, c) art, d) math and so forth. Our basic unit of analysis was simply how a child spent his time. It is possible, of course, to view treatment in more complex ways and focus on things like social interactions, teacher-child contacts, units of learning, mastery of activities, focal attention or decision-making processes, to give some examples. Observational data will be most likely to be related to outcomes if they are focused on the same overt behavior. For example, if change in self-esteem measures, or self-confidence measures are being expected as outcomes, observational measures ought to be related to same qualities of child behavior or social interactions that are expected to facilitate or effect change in these areas.

6. Relating Observational Data to Measured Change on the Selected Criteria.

Statistical analysis of these kinds of data present little problems with the availability of current library programs for computers that have been developed to do correlations, regression analysis, and multivariate analysis of variance. Some difficulty is encountered in discussing the meaning of change or gain scores over time, and the widely debated meaning of the regression effect. It is possible, however, to report data in less complex and more of a descriptive manner in which one can demonstrate the relationship of treatment to gain. For example, in the data analyzed for Montessori sample, we found simple correlations most instructive: Children who gained on tests that measured a skill called visual motor integration (block design) were also children who spent a good deal of time doing art activities and block and construction toy activities. The simple correlations between doing these activities and gain on these measures were high and positive. Children who did not show this gain had low negative correlations.

To summarize then, I would argue that it is possible to do evaluative research on open educational practices if we are willing to consider educational evaluation research as "treatment effect research" and carefully define outcomes and carefully describe treatment, and then demonstrate the relationship between the two.

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